APPENDIX A - SECTION 404(B)(1) EVALUATION

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SECTION 404(b)(1) EVALUATION

C-51 West End Flood Control Project, Supplemental EA
L-40 Borrow Canal Modifications, Berm/Widening and Dredging
Palm Beach County, Florida

I. Project Description

a. Location. The proposed project is located in central Palm Beach County, Florida (see ***Figure 1-1*** in the EA document, vicinity map) within the northeastern section of Water Conservation Area 1 (WCA-1), otherwise known as the Arthur R. Marshall Loxahatchee National Wildlife Refuge (LNWR or Refuge). Previously authorized features of the C-51 West End Flood Control Project are located immediately north of the proposed project area.

b. General Description. The proposed plan includes the construction of an approximately 945-foot berm at the junction of the S-362 discharge canal and L-40 BC, widening the L-40 BC for approximately 1,520 feet downstream of the S-362, and dredging approximately 13,500 feet of the L-40 BC. Dredge material would be disposed of at a previously chosen spoil area within the C-51 West End Flood Control Project boundary.

c. Authority and Purpose. The C-51 West End Flood Control Project is a component of the C&SF Flood Control Project and was authorized in Section 315 of the Water Resources Development Act (WRDA) of 1996. Other authorizations for C-51 improvements include the Flood Control Act of 1948 and 1962.

d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. Dredged material consists of different combinations of sand, silt, and clay, mostly organic sediment.

(2) Quantity of Material. Approximately 200,000 cubic yards will be dredged from the canal.

(3) Source of Material. Material adjacent to the canal would be used to build the berm, and material in the canal would be dredged and disposed of in an upland disposal site at STA-1E.

e. Description of the Proposed Discharge Site.

(1) Location. Dredged material would be deposited in a disposal site in STA-1E. See ***Figure 2-2*** of the EA.

(2) Size. The dredged material disposal site is approximately 540 feet by 1350 feet in size.

(3) Type of Site. Part of a stormwater treatment area, more than 13 acres.

(4) Type of Habitat. Cleared upland area used for disposal in previous projects.

(5) Timing and Duration of Discharge. Dredging would take place in the dry season.

f. Description of Disposal Method. A filter press or cyclone method would be used to dewater the sediment and, after dewatering, the sediment would be deposited adjacent to the east side of the East Distribution Cell of STA-1E. Water would be pumped up to the West Distribution Cell.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The slope would be 1 vertical on 3 horizontal. The L-40 Borrow Canal would be excavated to elevation –3.0 NGVD. The elevation in the area ranges from elevation 0 to 4 NGVD.

(2) Sediment Type. The type of sediment is a mixture of sand, silt, and clay and is mostly organic.

(3) Dredge/Fill Material Movement. Dredged material would be moved using a suction head dredge and pumped through pipes to the disposal area.

(4) Physical Effects on Benthos. No adverse effects expected.

b. Water Circulation, Fluctuation and Salinity Determination.

(1) Water Column Effects. Standing water and soils would be temporarily impacted during construction.

(2) Current Patterns and Circulation. Construction of the berm and widening would have minimal effects on current hydrologic circulation patterns. Dredging the canal would have no adverse effects on hydrologic patterns.

(3) Normal Water Level Fluctuations and Salinity Gradients. Surface and groundwater levels would not be affected. Salinity levels should not be affected by the proposed project.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site. There may be a temporary increase in turbidity levels in the project area during dredging. Turbidity would be short-term and localized and no significant adverse impacts are expected. State standards for turbidity would not be exceeded.

(2) Effects on the Chemical and Physical Properties of the Water Column. There may be temporary impacts to the chemical and physical properties of nearby waters during construction activities. There are no acute or chronic chemical impacts anticipated as a result of construction. An environmental protection plan, prepared during detailed design, will address concerns regarding monitoring of equipment, maintenance and security of fuels, lubricants, etc.

(a) Light Penetration. Light penetration would not be altered by this project.

(b) Dissolved Oxygen. Dissolved oxygen levels would not be altered by this project.

(c) Toxic Metals, Organics, and Pathogens. No toxic metals, organics, or pathogens are expected to be released by this project.

(d) Aesthetics. The aesthetic quality of the water in the immediate area of the project may be temporarily affected by turbidity during construction. This would be a short-term and localized condition.

(3) Effects on Biota.

(a) Primary Productivity and Photosynthesis. No impact expected.

(b) Suspension/Filter Feeders. No impact expected.

(c) Sight Feeders. No impact expected.

d. Contaminant Determinations.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. No impact expected.

(2) Effects on Benthos. No impact expected.

(3) Effects on Nekton. No impact expected.

(4) Effects on the Aquatic Food Web. No impact expected.

(5) Effects on Special Aquatic Sites.

(a) Hardground and Coral Reef Communities. No impact expected.

(b) Sanctuaries and Refuges. Temporarily impacted by construction.

(c) Wetlands. Approximately 10.1 acres of nuisance mixed herbaceous shrub wetlands would be filled in or cleared and 23 acres of disturbed wetlands would be used as a disposal area.

(d) Mud Flats. No impact expected.

(e) Vegetated Shallows. There would be some impacts to vegetation within the 10.1-acre footprint of the canal widening and berm and 23-acre footprint of the excavated material disposal area.

(f) Riffle and Pool Complexes. No impact expected.

(6) Endangered and Threatened Species. Five federally listed species, which occur in the vicinity, could be affected by the proposed project. These species are the bald eagle, Everglade snail kite (and its critical habitat), wood stork, Florida panther, and Eastern indigo snake. State listed species may also be impacted, particularly the burrowing owl.

(7) Other Wildlife. There would be temporary impacts to foraging and habitat of wading birds. Permanent impacts would include an alteration of the existing landscape of wetland to upland. Widening of the canal would make more of an area for fish to swim.

(8) Actions to Minimize Impacts. All practical safeguards will be taken during construction to preserve and enhance environmental, aesthetic, recreational, and economic values in the project area. Specific precautions are discussed in the EA.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. The dredged material would not cause unacceptable changes in the mixing zone water quality requirements as specified by the State of Florida's Water Quality Certification permit procedures. No adverse impacts related to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents are expected from implementation of the project.

(2) Determination of Compliance with Applicable Water Quality Standards. Because of the inert nature of the material to be used as fill, Class III water quality standards will not be violated.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supplies. No municipal or private water supplies would be impacted.

(b) Recreational and Commercial Fisheries. Recreational and commercial fisheries should not be impacted by the implementation of the project.

(c) Water Related Recreation. Water related recreation should not be impacted by the implementation of the project.

(d) Aesthetics. The existing environmental setting may be impacted. Construction activities would cause a temporary increase in noise and air pollution caused by equipment as well as some temporary increase in turbidity. Some vegetation buffering natural areas may be unavoidably removed or filled over during construction. These impacts are not expected to adversely affect the aesthetic resources over the long term and, once construction ends, conditions would likely return to pre-project levels.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. A wildlife refuge exists within the proposed project area and may be temporarily impacted by construction activities as described in (d) above. These impacts would be temporary in nature and the site would likely be returned to pre-construction conditions following the project.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. There would be no cumulative impacts that result in a major impairment of water quality of the existing aquatic ecosystem as a result of the proposed project.

h. Determination of Secondary Effects on the Aquatic Ecosystem. There would be no secondary impacts on the aquatic ecosystem as a result of the construction.

III. Findings of Compliance or Non-compliance with the Restrictions on Discharge.

a. No significant adaptations of the guidelines were made relative to this evaluation.

b. No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.

c. After consideration of disposal site dilution and dispersion, the discharge of fill materials would not cause or contribute to, violations of any applicable State water

quality standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. The berm/widening, dredging, and dredge disposal will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

e. The placement of fill material would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife would not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values would not occur.

f. On the basis of the guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the requirements of these guidelines.